A. M. D. G.

Loyola College



General Prospectus
1949 - 1950

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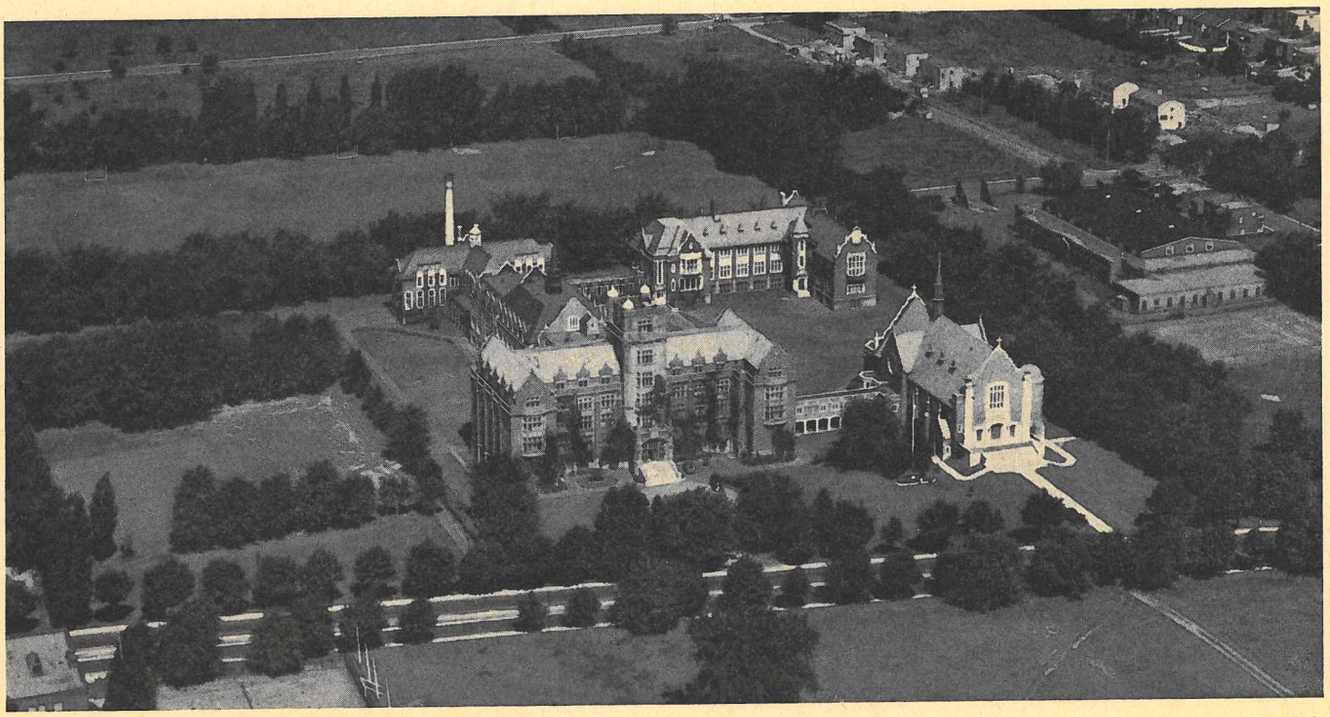
A. M. D. G.

Loyola College



General Prospectus
1949 - 1950

Loyola College also conducts a High School department for resident and non-resident students, as well as a Preparatory Class for Entrance to High School.
Ask for High School Prospectus.



Associated Screen News Ltd.

Refectory Building
Junior Building
Stadium
Administration Building
Chapel

CLASSES
WILL BE RESUMED ON
THURSDAY, SEPTEMBER 22nd
1949

GEORGES P. VANIER LIBRARY MONTREAL

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ACADEMIC CALENDAR

SEPTEMBER, 1949
- 12–15.....College Supplemental Examinations.
- 19–20–21....Registration for all Students.
- 22.....9.00 A.M. Mass and Sermon for College Students. Reading of promotions.
- 23.....Lectures resumed in the College.

OCTOBER, 1949
- 10.....THANKSGIVING. Full Holiday.
- 11.....College Retreat begins in afternoon.

NOVEMBER, 1949
- 1.....ALL SAINTS' DAY. Holy Day of Obligation.
- 10.....9.00 Solemn Anniversary Mass for deceased Masters and Students.
- 7-11.....Mid-semester tests.
- 25.....Feast of St. Catherine. Philosophers' Holiday.

DECEMBER, 1949
- 8.....IMMACULATE CONCEPTION. Holy Day of Obligation.
- 16.....Christmas recess begins.

JANUARY, 1950
- 3.....Classes resume. 9.00 A.M.
- 6.....EPIPHANY of OUR LORD. Holy Day of Obligation
- 13.....Mid-year examinations begin.
- 23.....Second semester begins.

FEBRUARY, 1950
- 8.....RECTOR'S DAY. Full Holiday.
- 21.....SHROVE TUESDAY. Full Holiday.

MARCH, 1950
- 6–12.....Mid-semester tests.
- 17.....St. Patrick's Day. Full Holiday.

APRIL, 1950
- 6.....HOLY THURSDAY. No class.
- 7.....GOOD FRIDAY. No class.
- 10.....EASTER MONDAY. Holiday.
- 11.....Final examinations begin for Third and Fourth Year Engineering Students.
- 28.....All lectures in College finish today.

MAY, 1950
- 1.....College examinations begin.

JUNE, 1950
- 1.....CONVOCATION.

Board of Trustees

REV. JOHN F. MCCAFFREY, S.J.....*President*
REV. ARTHUR WILSON, S.J.....*Secretary*
REV. JOHN GRIMES, S.J.....*Treasurer*
REV. WILLIAM CONNOR, S.J.
REV. HUGH C. MCCARTHY, S.J.

JOHN T. HACKETT, K.C., M.P.
Legal Adviser

Officers of Administration

REV. JOHN F. MCCAFFREY, S.J.
Rector.
REV. WILLIAM CONNOR, S.J.
Dean of the Faculties of Arts and Science.
REV. JOHN MASTERSON, S.J.,
Prefect of College Discipline.
REV. JOHN MCCARTHY, S.J.,
Prefect of High School Studies.
REV. JAMES TOPPINGS, S.J.,
Prefect of High School Discipline.
REV. DOUGLAS DALY, S.J.,
Student Counsellor.
REV. JOHN GRIMES, S.J.,
Minister.
MISS EILEEN GIBBONS,
Registrar.
MR. F. STANLEY JOHNSON,
Bursar. (WA. 5923).

Faculty

College Department

MR. ALEXANDER BEATON, B.SC.,
Algebra, Demonstrator in Physics.
MR. M. D. BURROWS, B.SC., M.SC.,
Mathematics.
REV. WILLIAM CONNOR, S.J.,
Organic Chemistry.
REV. FRANCIS DEVINE, S.J.,
French, Dramatics.
REV. STANLEY DRUMMOND, S.J.,
Zoology, Histology, Biology.
REV. J. M. FILION, S.J.,
Theology.

MR. JOSEPH FULTZ, B.A., B.COMM.,
Economic History, Accounting.
MR. FRANK GUADAGNI, B.SC.,
Mathematics, Physics, Engineering. (EL. 2051).
MR. WALTER HITSCHFELD, B.A., B.SC.,
Physics.
MR. RENE JOOSTE, B.SC.,
Geology.
T. R. INGRAHAM, PH.D.,
Analytical Chemistry, Colloids.
MR. JAMES LEAHY, B.SC.,
Physics Lab.
REV. JOSEPH LEDIT, S.J.,
History.
REV. GERALD MACGUIGAN, S.J.,
English.
MR. MARTIN MACINNIS, B.SC.,
General Chemistry.
REV. RONALD MACKINNON, S.J.,
Superintendent of Science Laboratories.
REV. HUGH MACPHEE, S.J.,
Mathematics, Physics.
MR. FREDERICK MARTELL, B.SC.,
Demonstrator in Biology.
REV. JOHN MASTERSON, S.J.,
Latin, English.
REV. THOMAS MOYLAN, S.J.,
Theology, Psychology.
REV. JAMES MURPHY, S.J.,
Theology, Chemistry.
MR. FRANCIS MCGEE, B.A.,
Demonstrator, Chemistry.
REV. FREDERICK NOLL, S.J.,
English, Public Speaking.
REV. ERIC O'CONNOR, S.J.,
Mathematics, History of Science.
REV. HORATIO PHELAN, S.J.,
Philosophy, Economics, Sociology.
MR. EUGENE ROY, B.A., M.A.,
French, History.
REV. ERIC SMITH, S.J.,
Latin, Spanish, Greek.
REV. LIONEL STANFORD, S.J.,
Philosophy, Psychology.
C. A. WINKLER, M.SC., PH.D., (MCGILL),
D.P.H. (Oxon) F.R.Sc., O.B.E.
Physical Chemistry.
MAJOR J. E. L. CASTONGUAY,
Resident Staff Officer, C.O.T.C.

GENERAL INFORMATION

Status

Loyola College, conducted by the Fathers of the Society of Jesus of the Canadian Province, was incorporated by an act of the Quebec Legislature on the second of February, 1899.

By the ecclesiastical and educational authorities of the Province, the new College was regarded as an off-shoot or, as they termed it, an extension of St. Mary's College of Montreal (founded by the Jesuit Fathers in 1847—a successor to the historic *College of Quebec* founded in 1663), and as such, was made to share in the privileges granted to that institution by the Holy See in its Constitution "Jamdudum".

In consequence of this arrangement, Loyola College, while profiting by a very close association with Laval University, Quebec, and granting Laval degrees to Loyola graduates, was assured of complete autonomy and independence in the shaping of its curriculum, and in the conducting of its examinations.

A similar arrangement was made with the University of Montreal when it became autonomous. Through a special arrangement with the University of Montreal, this University grants the B.Sc. degrees to the students who have successfully completed a Science or an Engineering course. The curriculum, examinations, etc., of these courses are under the control of the Faculty of Science of the University of Montreal.

History

In the autumn of 1896 Loyola College began its existence under the direction of the Reverend Gregory O'Bryan, S.J. Its first home was a building, since torn down, situated at the south-east corner of St. Catherine and Bleury Streets.

Before the end of the second year a fire necessitated the removal of the College, and a property was purchased at 68 Drummond Street, which had been a Protestant High School and which, considerably enlarged, was to house the staff and the students for nearly twenty years. During the war, this property was the Prince of Wales Military Hospital.

It may be said, however, that Loyola College had its beginning in the Separate Course inaugurated in September, 1889, for English-speaking students at St. Mary's College, and the students of these classes have always been looked upon as the pioneer students of Loyola.

Within a very few years of its foundation it was felt that a College which received so many boarding-students required ample grounds, and different efforts were made to secure a large piece of property. Finally, Father William Doherty, S.J., secured, in what was then the Municipality of Notre Dame de Grace, a farm of approximately 50 acres. The rapid development of the city westward soon brought this hitherto inaccessible piece of property within easy reach of all parts of the city by an excellent electric tramway service.

In the late Autumn of 1913 the first excavations of the Loyola College buildings were begun, and in the following year building operations were

under way. In the summer of 1916 the College was definitely removed from Drummond Street to its present quarters.

Location

Loyola College is situated on Sherbrooke Street West, at the extreme western end of the city, in one of the choicest suburban districts, quite near the Canadian Pacific Railway station of Montreal West. Though enjoying the advantages of an excellent car service, placing the College within half an hour of the heart of the city, the College yet enjoys all the advantages of the country in unclouded air and open spaces. The location is very salubrious. It is 180 feet above the St. Lawrence, on ground that on one side slopes up to Mount Royal and on the other three sides gradually falls away towards the Lachine rapids of the St. Lawrence River, towards Lake St. Louis, towards the Lake of Two Mountains and the Ottawa River. The prevailing wind blowing across farmlands and orchards, and uncontaminated by smoke, comes directly down the valleys of the St. Lawrence and of the Ottawa, which unite just above Montreal.

Buildings and Grounds

In design the new buildings are of the Tudor and early Renaissance type of English Collegiate Gothic. Six buildings are now erected and when the projected buildings are all complete they will undoubtedly rank among the most beautiful in the country. The buildings are absolutely fire-proof. The ventilating system, sanitary arrangements, and the kitchens and dependencies embody all the latest improvements.

The college grounds cover about fifty acres. A spacious playing field measuring approximately 270 yards by 150 yards is a distinctive feature of the College campus. There is, besides, ample space devoted to tennis-courts and to playgrounds for the shorter recreations.

The Stadium or indoor hockey rink is a handsome, substantial building, with a large ice-surface, convenient dressing-rooms, shower-baths, etc.

SYSTEM OF EDUCATION

The educational system is substantially that of all Jesuit Colleges which is clearly set forth in the "Ratio Studiorum". Education in its completest sense, as understood by the Fathers of the Society, is the full and harmonious development of all the faculties. It is not, therefore, mere instruction, nor communication of knowledge. In fact, the acquisition of knowledge, though it necessarily accompanies any right system, is a secondary result of education. Learning is the instrument of education not the outcome. Its outcome is culture, mental and moral, and such studies, languages or sciences, are chosen as will most effectively further this end.

In the Arts Course the preference is given to the Classics and Philosophy over all other subjects, as the fittest instruments to promote this intellectual and moral growth. But this preference is not exclusive. The importance of mathematics and the natural sciences, as instruments of education, has not been under-estimated.

Likewise in the Science, Engineering, and Commerce Courses, the student, while receiving a training in his chosen branch of studies, is obliged to follow courses in Theology, English, French and Philosophy.

The New Commerce Course

To meet a long felt need, a four-year course leading to the Degree of Bachelor of Commerce was established at Loyola in September, 1948. Its purpose is both formative and utilitarian and it is designed to give the student a solid grounding in the fundamental principles which govern the economic life of modern society. It envisages both those who look forward to a career in business or finance and have at their disposal only a limited time for College preparation as well as those who intend to go on for graduate work in Economics or Business Administration. In addition to the standard subjects taught in the Commerce Departments of Canadian and American Universities, two years of Philosophy and four years of Theology are compulsory.

MORAL AND RELIGIOUS TRAINING

The College authorities are convinced that without religion there can be no perfect education in the true sense of the word, that is to say, no complete and harmonious development of the intellect and the heart of man. They hold, furthermore, that religious truth, being definite and certain like any other truth, is as susceptible of being taught as languages or mathematics. Hence religion is an integral part of the curriculum. The students are required to comply with their religious obligations regularly, and to make annually a spiritual retreat of three days. Societies and other associations are also formed for the fostering of piety.

PHYSICAL CULTURE

Although the principal solicitude of the College authorities is for the development of the student's intellectual and moral faculties, the physical training is by no means overlooked. Tennis, football, baseball, basket-ball, and in winter, skiing, skating and hockey, provide abundant opportunities for healthy exercise. Inter-class games and matches with outside teams and a yearly Field Day of track events furnish the necessary emulation.

On their arrival after their summer vacations students are required to provide a certificate of good health and will be given a thorough medical examination, a record of which will be kept by the College authorities.

EQUIPMENT

Libraries

The *College Library* comprises about twenty-six thousand volumes; of these more than six thousand volumes are in the College Reading Room where, also, the most useful current magazines are always on file.

A growing record collection is available for student use in the Music Room attached to the Library.

Science Department

Two large laboratories are available for Physics, Elementary and Advanced, with, in addition, two smaller laboratories for special experiments in Light and Electricity.

The Chemistry facilities offer adequate space for under-graduate courses in general, analytical, organic and physical chemistry.

Biology affords all the necessary facilities for pre-medical work.

The College also possesses a drafting-room and a Geology Lab.

Needs of the College

Although the College has received substantial financial aid from the Campaign Funds of 1938 and 1946, the present equipment of buildings and educational apparatus has been acquired by incurring a considerable debt.

It is of the utmost importance that this debt should be rapidly diminished and that the College should be placed in a position to erect the buildings originally planned and to undertake other greatly needed improvements.

For these purposes, and for the general development of the College, the Rector appeals to all graduates, former students, and friends of Catholic education for donations and legacies. The names of donors will be attached to buildings erected or funds established by them.

The legal title of the College for the purpose of bequests and donations is "*Loyola College*", Montreal.

STUDENT ORGANIZATIONS

Social Activities

College life must include the development of the social side of every student's character. Marked initiative, "savoir-faire" and leadership in organized religious and social movements for the common welfare of his fellows are qualities generally expected of a college man. For this purpose the College student organizations and activities furnish splendid opportunities.

However, be it said that with regard to all forms of college activities the policy of the Faculty has always been that the student's first duty in college is attention to study, and that no other student activity should be allowed to interfere with this main purpose of college life.

Eligibility Rules

Students taking part in dramatic performances, public debates, oratorical or elocution contests, or athletic events, as well as all officers of student organizations are subject to the following eligibility rules: (1) They must have shown satisfactory conduct and application and must remain in good

academic standing; (2) they must not be under censure at the time of their election or appointment.

Sodality of the Immaculate Conception

The purpose of the Sodality is to develop Christian character under the protection of the Mother of Our Lord and to cultivate the lay apostolate. The College Sodality endeavours to obtain this two-fold purpose by conducting weekly meetings in the Chapel at which the Office of the Blessed Virgin is recited and instructions are given by the Director, and by organizing sections for the promotion of special activities.

The Apostleship of Prayer, League of the Sacred Heart

The object of the Apostleship is two-fold: first, to instil into the students that apostolic spirit which, as public men, it is hoped they will later on exercise in the world; and secondly, to join in the great work of reparation for the outrages daily offered to Our Lord.

The public exercises, besides the regular Promoters' meetings, consist of monthly meetings of reparation to the Blessed Sacrament, on the First Friday of each month.

St. John Berchmans Society

This Society is of long standing in the College. It has for its object the fostering of an especial devotion in assisting at the altar in all religious ceremonies. Membership is restricted to resident students.

Loyola College Literary and Debating Societies

The Loyola College Literary and Debating Society, composed of students of Junior and Senior years, offers its members an opportunity for training in public speaking, which is at once practical and interesting. Formal debates between four speakers who have prepared their speeches, followed by general impromptu discussion, are held every week. Debates with the students of other Universities are arranged by the Inter-University Debating League of Canada, of which the Loyola College Debating Society is one of the constituent members. Inter-class debates are also included in the activities of the Society.

The *Forum*, a Literary and Debating Society composed of students of Freshman and Sophomore years, trains its members in public speaking, and in addition requires of them the preparation and public reading of papers on literary subjects. Its members are eligible for the Inter-University and Montreal Debating League teams and for inter-class debates.

College Orchestra

The College Orchestra affords opportunity for ensemble playing. Membership is open to those students who have sufficiently mastered the technique of an orchestral instrument, and display satisfactory facility in reading at sight moderately difficult music. The work of the orchestra is considerable, as it is called upon to play at the College entertainments throughout the year.

Athletic Association

The *Loyola College Athletic Association* was formed to encourage physical exercise and to create and foster a college spirit among the students. The general supervision of all athletics is in charge of the Athletic Board of Control.

The Board has charge of all matters pertaining to athletic sports at the College, such as: Eligibility of players on all teams, investigations of charges of misconduct against any player, arrangements of schedules and signing of contracts, purchase of athletic supplies, awarding of Letters, and the like.

The Athletic Board of Control consists of the Faculty Director of Athletics and the Students' Executive Committee.

The policy of the Board is that of hearty encouragement of all forms of intra-mural and inter-collegiate athletics.

INTRA-MURAL—The College has organized Leagues in baseball, tennis, football, hockey and basketball, thus securing for all students ample opportunities for healthy exercise and recreation.

EXTRA-MURAL—Representative teams contest with other colleges in the above named branches of sport. The members of these teams must furnish satisfactory scholastic records.

The Loyola College Alumni

The Loyola College Alumni has as its object to preserve and strengthen the ties of fellow-feeling and friendship among former students of the College and to afford them an opportunity of showing their attachment and esteem for their Alma Mater.

Any former student of the College may become a member of the Association, but may not become an officer until three years after his class has graduated from the College.

A General Meeting is held every year at the College. At this meeting officers for the coming year are elected, and all matters of general business transacted.

Loyola College Review and Loyola News

The "*Review*", established in 1915, is the principal publication issued by the students. Its purpose is to encourage literary efforts, and to chronicle matters of interest pertaining to the College. Our Alumni are cordially invited to co-operate in making the "*Review*" a useful medium of intercommunication. It is published on or about the 15th of June, and depends for its support on the students and friends of the College.

The "*Loyola News*", issued fortnightly, is a brief résumé of current events in College life. Copies are distributed to the students as well as sent regularly to the Alumni. As the monthly and semester standing in application and scholarship is published in the "*News*", parents should find it a valuable aid in judging of their sons' progress.

Loyola College Contingent C. O. T. C.

Aim

The Loyola College Contingent, Canadian Officers' Training Corps, is organized under the authority of Army Headquarters, Ottawa, and for all purposes of discipline and training is under the General Officer Commanding, Quebec Command, represented by a Resident Staff Officer attached to each University. The aim of the newly organized C.O.T.C. is to ensure Canada of its future leaders in Science, business, citizenship and in the event of war.

Training

This new establishment allows for a definite quota which is to be filled by volunteers from the College courses and further approved by the University Selection Board. The selected volunteer is given the rank of Student Provisional 2nd Lieutenant throughout the three years of his training and a choice of any branch of the Army. Also if the student so desires he may join, upon graduation, either the Canadian Army Active Force, Reserve Force, Supplementary Reserve or Retire. Each year of his training period is divided into 1: Theoretical lectures (Military Science and Geography) carried on during the academic year, and, 2: a Practical Phase, based upon his chosen branch, carried out during the Summer Vacation at an allotted Military Camp.

Qualification

Upon the completion of the student's 2nd year training he will be qualified 2nd Lieutenant, Active Force and Lieutenant, Reserve Force. At the end of his 3rd year, he will be qualified Lieutenant, Active, and Captain, Reserve Force.

COURSE IN CHEMICAL ENGINEERING

Year	Subject	Lect. Hrs.	Lab. Hrs.	Sem's.	Index
First	Algebra (Maths. 3)	3	..	2	3/2
	Analytic Geometry (Maths. 2b)	3	..	1	½
	Chemistry 1	3	3	2	2
	English 4	3	..	2	1
	French 4	2	..	2	1
	Physics 1	4	3	2	2
	Public Speaking	1	..	2	½
	Theology 1	2	..	2	½
	Trigonometry (Maths. 2a)	3	..	1	1
Second	Analytic Geometry (Maths. 6a)	3	..	1	½
	Calculus (Maths. 5)	3	..	2	3/2
	Chemistry 7, 7P	2	1	2	1
	Descriptive Geometry 1	2	4	2	2
	English 9, 13	3	..	2	1,¼
	Engineering Problems 1	1	..	2	¼
	French 9	2	..	2	1
	Mechanical Drawing 1	..	3	2	1
	Physics 2	3	3	2	3/2
	Theology 2	2	..	2	½
Third	Algebra and Spherical Trig. (Maths. 8a)	3	..	1	1
	Algebra and Calculus (Maths. 8b)	3	..	1	1
	Chemistry 3	2	6	1	1
	Chemistry 4	2	9	1	3/2
	Engineering Problems 2	1	2	2	½
	History 4	1	..	2	½
	Mechanics 1	2	..	2	1
	Philosophy 1, 7	5	..	2	½, 3/2
	Physics 3	3	3	2	2
	Surveying 1	2	..	1	½
	Theology 3	1½	..	2	½
Fourth	Chemistry 5	3	3	2	5/2
	Chemistry 10	1	6	2	3/2
	Engineering Problems 3	1	2	1	½
	Materials of Engineering 1	1	..	2	½
	Mechanics 2	2	2	2	1
	Philosophy 8, 9	5	..	2	½,3/2
	Problems of Advanced Calculus (Maths. 14)	3	..	2	1
	Summary Essay	..	..	..	½
	Theology	1½	..	2	½

Course in Civil, Electrical and Mechanical Engineering

Year	Subject	Lect. Hrs.	Lab. Hrs.	Sem's.	Index
First	Algebra (Maths. 3)	3	..	2	3/2
	Analytic Geometry (Maths. 2b)	3	..	1	½
	Chemistry 1	3	3	2	2
	English 4	3	..	2	1
	French 4	2	..	2	1
	Physics 1	4	3	2	2
	Public Speaking	1	..	2	½
	Theology 1	2	..	2	½
	Trigonometry (Maths. 2a)	3	..	1	½
Second	Analytic Geometry (Maths. 6a)	3	..	1	½
	Calculus (Maths. 5)	3	..	2	3/2
	Chemistry 7, 7P	2	1	2	1
	Descriptive Geometry 1	2	4	2	2
	English 9, 13	3	..	2	1, ¼
	Engineering Problems 1	1	..	2	¼
	French 9	2	..	2	1
	Mechanical Drawing 1	..	3	2	1
	Physics 2	3	3	2	3/2
	Theology 2	2	..	2	½
Third	Algebra and Spherical Trig. (Maths. 8a)	3	..	1	1
	Algebra and Calculus (Maths. 8b)	3	..	1	1
	Engineering Problems 2	1	2	2	½
	Geology 1	2	2	2	3/2
	History 4	1	..	2	½
	Mechanics 1	2	..	2	1
	Philosophy 1, 7	5	..	2	½, 3/2
	Physics 3	3	3	2	2
	Surveying 1	2	..	1	½
	Surveying 2 Field Work (Summer)	..	..	..	½
	Theology 3	1½	..	2	½
Fourth	**D/C Motors (Physics 9)	2	..	1	½
	Mapping 1	..	6	1	½
	Materials of Engineering 1	1	..	2	½
	Mechanical Drawing 2	3	..	2	1
	Mechanics 2	2	2	2	1
	Mechanics of Machines 1	1	3	1	1
	Philosophy 8, 9	5	..	2	½, 3/2
	Problems of Advanced Calculus (Maths. 14)	1	2	2	1
	Surveying 3	2	..	1	½
	Summer Essay	..	..	..	½
	Theology 4	1½	..	2	½

**Only for Electric Engineers.

In addition to the above courses:

Mechanical Engineers take a four-week summer school in Mechanical Drawing and Machine Shop Work during September after Fourth Year. Civil Engineers attend a special summer school in Surveying during September after Fourth Year.

Course in Mining Engineering

Year	Subject	Lect. Hrs.	Lab. Hrs.	Sem's.	Index
First	Algebra (Maths. 3)	3	..	2	3/2
	Analytic Geometry (Maths. 2b)	3	..	1	½
	Chemistry 1	3	3	2	2
	English 4	3	..	2	1
	French 4	2	..	2	1
	Physics 1	4	3	2	2
	Public Speaking	1	..	2	½
	Theology 1	2	..	2	½
	Trigonometry (Maths. 2a)	3	..	1	1
Second	Analytic Geometry (Maths. 6a)	3	..	1	½
	Calculus (Maths. 5)	3	..	2	3/2
	Chemistry 7, 7P	2	1	2	1
	Descriptive Geometry 1	2	4	2	2
	English 9, 13	3	..	2	1, ¼
	Engineering Problems 1	1	..	2	¼
	French 9	2	..	2	1
	Mechanical Drawing 1	..	3	2	1
	Physics 2	3	3	2	3/2
	Theology 2	2	..	2	½
Third	Algebra and Spherical Trig. (Maths. 8a)	3	..	1	1
	Algebra and Calculus (Maths. 8b)	3	..	1	1
	Chemistry 3	2	6	1	1
	Chemistry 4	2	9	1	3/2
	Engineering Problems 2	..	3	2	½
	Geology 1	2	2	2	3/2
	History 4	1	..	2	½
	Mechanics 1	2	..	2	1
	Philosophy 1, 7	5	..	2	½, 3/2
	Physics 3	3	3	2	2
	Surveying 1	2	..	1	½
	Surveying 2, Field Work (Summer)	..	..	..	½
	Theology 3	1½	..	2	½
Fourth	Mapping	..	3	1	½
	Materials of Engineering 1	1	..	2	½
	Mechanical Drawing 2	..	3	1	1
	Mechanics 2	2	2	2	1
	Mineralogy 1	2	..	2	1
	Mineralogy 2	..	3	1	½
	Mineralogy 3	3	..	1	½
	Philosophy 8, 9	5	..	2	½, 3/2
	Problems of Advanced Calculus (Maths. 14)	3	..	2	1
	Surveying 3	2	..	1	½
	Summer Essay	..	..	..	½
	Theology 4	1½	..	2	½

In addition: Students in Mining Engineering are required to attend a Special Summer School in Surveying during September after Fourth Year.

Course in Engineering Physics

Year	Subject	Lect. Hrs.	Lab. Hrs.	Sem's.	Index
First	Algebra (Maths. 3)	3	..	2	3/2
	Analytic Geometry (Maths. 2b)	3	..	1	½
	Chemistry 1	3	3	2	2
	English 4	3	..	2	1
	French 4	2	..	2	1
	Physics 1	4	3	2	2
	Public Speaking	1	..	2	½
	Theology 1	2	..	2	½
	Trigonometry (Maths. 2a)	3	..	1	1
Second	Analytic Geometry (Maths. 6a)	3	..	1	½
	Calculus (Maths. 5)	3	..	2	3/2
	Chemistry 7, 7P	2	1	2	1
	Descriptive Geometry 1	2	4	2	2
	English 9, 13	3	..	2	1, ¼
	Engineering Problems 1	1	..	2	¼
	French 9	2	..	2	1
	Mechanical Drawing 1	..	3	2	1
	Physics 2	3	3	2	3/2
	Theology 2	2	..	2	½
Third	Algebra and Spherical Trig. (Maths. 8a)	3	..	1	1
	Algebra and Calculus (Maths. 8b)	3	..	1	1
	Differential Equations (Maths. 9)	3	..	1	1
	Engineering Problems 2	1	2	2	½
	History 3	1	..	2	½
	Mechanics 1	2	..	2	1
	Philosophy 1, 7	5	..	2	½, 3/2
	Physics 3	3	3	2	2
	Surveying 1	2	..	1	½
	Surveying 2 Field Work (Summer)	..	..	..	½
	Theology 3	1½	..	2	½
Fourth	Infinite Series and Integrals (Maths. 11)	3	..	1	1
	Mapping 1	..	3	1	½
	Materials of Engineering 1	1	..	2	½
	Mechanics 2	2	2	2	1
	Methods of Advanced Calculus (Maths. 13)	3	..	1	1
	Philosophy 8, 9	5	..	2	½, 3/2
	Physics 3	3	3	2	2
	Physics 5	2	..	2	1
	Problems of Advanced Calculus (Maths. 14)	1	2	2	1
	Summer Essay	..	..	..	½
	Theology 4	1½	..	2	½

Course leading to Bachelor of Commerce

Year	Subject	Lect. Hrs.	Sem's.	Index
First	Accountancy 1	3	2	2
	Economics 1—Economic History	3	2	2
	English 1, 3	4	2	2, 3/2
	French 3	3	2	3/2
	Mathematics 1	3	2	3/2
	Public Speaking	1	2	½
	Theology 1	2	2	1
Second	Accountancy 2	3	2	2
	Commercial Law	3	2	3/2
	Economics 2—Principles of Economics	3	2	2
	English 5, 8	4	2	2, 3/2
	French 5	3	2	3/2
	Mathematics 2b	3	1	3/4
	Mathematics 17	3	1	3/4
	Public Speaking	1	2	½
	Theology 2	2	2	1
Third	Accountancy 3 or an Elective	3	2	2
	Economics 3—Statistical Methods	3	2	2
	Economics 4—Money and Banking	3	2	2
	English 10	2	2	3/2
	Philosophy 1, 2	6	2	1, 3
	Public Speaking	1	2	½
	Theology 3	1½	2	1
Fourth	Accountancy 4	3	2	2
	Economics 5—Economic Theory	3	2	2
	Economics 6—Labour Problems and Institutions	3	2	2
	Economics 7—International Trade and Trade Policy	3	2	2
	Philosophy 3, 4	6	2	1, 3
	Public Speaking	1	2	½
	Sociology 1, 2	2	2	1
	Theology 4	1½	2	1

NB.—Third Year will be offered in 1950-51.

DETAILS OF COURSES OF INSTRUCTION

The Faculty reserves the right to refuse to offer a course listed below for which there is not a sufficient number of applicants.

ACCOUNTANCY

Accountancy 1. Introductions to Books of Account and Financial Statements; theory of debit and credit; principles of double entry; books of original entry; transactions through the general journal and sales and purchase books; special forms of cash book; controlling accounts; general ledger; accounts receivable and accounts payable ledgers; discounts, interest, prepaid and accrued charges; notes and bills of exchange cheques, invoices, statements of account, bills of lading and other; commercial papers; imprest system of petty cash; depreciation; reserves for bad debts and discounts inward and outward consignments; capital and revenue expenditures; bank reconciliations; voucher register single entry; preparation of Trading and Profit and Loss Statements and Balance Sheets, single proprietorship.

LECTURES: *Three hours a week for two semesters.*

TEXT-BOOKS: McFarland, *Accounting Fundamentals* (McGraw-Hill) Thompson, *120 Exercises in Bookkeeping* (Pitman).

Accountancy 2. Partnership, Corporations and Manufacturing accounts. Operating statements, Balance sheets; Partnerships; Manufacturing accounts, statements; corporations; departmental accounts; depreciation.

LECTURES: *Three hours a week for two semesters.*

Accountancy 3. Statement analysis, auditing and branch accounts.

LECTURES: *Three hours a week for two semesters.*

Accountancy 4. Cost accounting, consolidation and Income Taxes.

LECTURES: *Three hours a week for two semesters.*

ASTRONOMY

LECTURES: *One hour a week for two semesters.*

TEXT-BOOK: Baker, *Astronomy.*

BIOLOGY

Biology 1. Fundamental Biology. A series of thirty-five lectures and demonstrations designed to acquaint the general student with those fundamental principles of life which are the basis for an understanding of the structure and function of the living body.

LECTURES: *Three hour a week for one semester.*

REFERENCE BOOKS: Williams, *A textbook of Anatomy and Physiology* (Saunders), Best & Taylor: *The Human Body and its Functions* (Holt), Mavor: *General Biology* (MacMillan).

Biology 2. Invertebrate Zoology. An introductory course including the following topics:

(a) The meaning of Science and Scientific Method and their application to the living sciences.

(b) The characteristics of life, protoplasm, the cell as the unit of structure and function.

(c) A detailed and comparative study of the phyla of the invertebrate animals.

LECTURE: *One hour per week for two semesters.*

TEXT-BOOK: Storer, *General Zoology* (McGraw-Hill).

REFERENCE BOOKS: Buchsbaum, *Animals without backbones* (Univ. of Chicago Press)
Hegner, *College Zoology* (Macmillan).

Biology 3. Invertebrate Zoology. A laboratory course designed to accompany course 2. It includes introductory exercises on the use of the microscope and the interpretation of microscopic sections. A detailed study is made of the internal and external anatomy of representative animals of the invertebrate phyla. This is supplemented, where possible, by a study of living animals and microscopic sections.

LABORATORY: *Three hours per week for two semesters.*

Biology 4 Vertebrate Zoology. A lecture course designed to follow course 2. It covers such topics as the essential difference between the invertebrates and the vertebrates, classification and history of the vertebrates, the basic structure of the vertebrate body. Following this, the important type vertebrates will be studied in detail, particular stress being laid on comparative structure.

LECTURE: *Two hours per week for two semesters.*
TEXT-BOOK: Storer, *General Zoology* (McGraw-Hill).
REFERENCE BOOKS: Walter, *Biology of the Vertebrates* (Macmillan).
Neal and Rand, *Chordate Anatomy* (Blakiston).
PREREQUISITE: *Biology* 1.

Biology 5. Lab. Vertebrate Zoology. A laboratory course to illustrate course 4. It comprises a detailed study of the structure of amphioxus, dogfish, frog and rabbit. The course is so conducted that, by training in exact dissection, observation and the preparation of carefully executed drawings, the student may be able to trace the main features of organisation from the lower to the higher vertebrates.

LABORATORY: *Six hours per week for two semesters.*
TEXT-BOOKS: Craigie, Bensley's *Practical Anatomy of the Rabbit* (Univ. of Toronto Press).

Biology 6. Histology. An introductory course which begins with the cell as the unit of structure and growth. Amitosis, mitosis and meiosis are

discussed. The origin and basic types of animal tissues are explained, and special reference is made to their derivatives in vertebrate histology.

LECTURE: *Two hours per week for one semester.*
REFERENCE BOOKS: Maximow and Bloom, *Textbook of Histology* (Saunders).
Stiles, *Handbook of Histology* (Blakiston).
Cole, *Textbook of comparative Histology* (Blakiston).

Biology 7. Histology. A laboratory course to accompany course 6. It is designed to introduce the student to the fundamentals of cytological and histological technique, and to illustrate by means of prepared slides the phenomena of amitosis, mitosis and meiosis, as well as the basic types of histological tissues.

LABORATORY: *Three hours per week for one semester.*

Biology 8. Survey Course. A course of thirty lectures on selected topics from the sciences of Genetics, Embryology, Physiology and Comparative Anatomy, whose purpose is to introduce the student to the fundamental principles and theories of Biology from the stand-point of origin, development, structure and function.

LECTURE: *Two hours per week for one semester.*
REFERENCE BOOKS: Sinnott and Dunn, *Principles of Genetics* (McGraw-Hill).
Arey, *Developmental Anatomy* (Saunders).
Heilbrunn, *An Outline of General Physiology* (Saunders).
William, *Text-book of Anatomy and Physiology* (Saunders).
Neil and Rand, *Comparative Anatomy* (Blakiston).

CHEMISTRY

Chemistry. 1. *General Chemistry (full course).* Theory — An introduction to the fundamental principles and facts of chemistry. Non-mathematical discussion of the kinetic molecular theory. Theory of ionization and of the factors influencing reaction velocities and equilibrium. Systematic study of properties and reactions of representative elements. Laboratory— A study of the properties of non-metals and their compounds, quantitative experiments (including volumetric analysis) and an introduction to qualitative analysis.

LECTURES: *Three hours per week for two semesters.*
LABORATORY: *Three hours per week for two semesters.*
TEXT-BOOK: Briscoe, *College Chemistry* (Houghton-Mifflin)
Barnes, *General Chemistry Laboratory Manual* (Renouf).
REFERENCE BOOK: Schlesinger, *General Chemistry* (Longmans-Green).

Chemistry. 2. A course in Chemistry offered to students of the B.A. Course.

LECTURES: *Three hours a week for one semester.*
REFERENCE BOOKS: Hatcher, *An Introduction to Chemical Science* (Wiley). Glockler, *Chemistry in our Time* (Crofts).

Chemistry. 3. *Semi-Micro Inorganic Qualitative Analysis* (*full course*). Theory — Nature of solutions, electrolytes, law chemical equilibrium, ionization constants, solubility products, common ion effect, formation and dissolution of precipitates, equilibrium law applied to hydrolysis, amphoterism, complex ions and complex compounds. Laboratory — The methods and technique of semi-microanalysis are applied to the ordinary scheme for the separation and identification of the common ions.

LECTURES: *Two hours per week for one semester*

LABORATORY: *Six hours per week for one semester.*

TEXT-BOOK: Engelder, *Fundamentals of Semi-Micro Qualitative Analysis* (Wiley).

PREREQUISITE: *Chemistry I.*

Chemistry. 4. *Quantitative Inorganic Analysis* (*Elementary*) (*full course*). Theory — Theoretical aspects of precipitation in gravimetric and volumetric analysis, theory of indicators, acid-base titration, oxidation — reduction methods of analysis. Laboratory — simple gravimetric determinations, methods of volumetric analysis, precipitation, oxidation-reduction and neutralization.

LECTURES: *Two hours per week for one semester.*

LABORATORY: *Nine hours per week for one semester.*

TEXT BOOK: *Quantitative Analysis*, Booth Damerell (McGraw-Hill) Kolthoff, Sandell, *Text-Book of Quantitative Inorganic Analysis* (MacMillan).

PREREQUISITE: *Chemistry 1.*

Chemistry. 5. *Organic Chemistry* (*Elementary*) (*full course*). Nomenclature, synthesis and type reactions of aliphatic, alicyclic and aromatic hydrocarbons and their principal derivatives. Elementary applications of electron theory to organic chemistry.

LECTURES: *Three hours per week for two semesters.*

LABORATORY: *Three hours per week for two semesters.*

TEXT BOOKS: Brewster, *Organic Chemistry* (Prentice-Hall).
Degering, *The Quadri-Service Manual of Organic Chemistry* (Houghton Mifflin Company).
Huntress, *Problems in Organic Chemistry* (McGraw-Hill).

Chemistry. 6. *Organic Chemistry* (*elementary*) (*full course*). This course is similar to Chemistry 5, and is offered to Pre-Medical Students.

LECTURES: *Three hours per week for two semesters.*
LABORATORY: *Three hours per week for two semesters.*
TEXT BOOKS: Fieser & Fieser, *Organic Chemistry* (Heath).
Degering, *The Quadri-Service Manual of Organic Chemistry* (Houghton Mifflin Company).

Chemistry. 7. *Physical Chemistry* (*Elementary*) (*full course*). Introductory course in the principles of Physical Chemistry, and includes the following topics: states of matter, equilibria, electrochemical phenomena, chemical kinetics, thermodynamics.

LECTURES: *Two hours per week for two semesters.*
TEXT-BOOK: Maass and Steacie, *Introduction to the Principles of Physical Chemistry* (Wiley).
REFERENCE BOOK: Getman-Daniels, *Outline of Physical Chemistry.*
PREREQUISITE: *Chemistry 1.*

Chemistry. 7P. *Physical Chemistry Problems* (*half-course*). Problems to illustrate the physico-chemical principles.

LECTURE: *One hour per week for two semesters.*
TEXT-BOOK: Babor and Thiessen, *How to Solve Problems in Physical Chemistry* (Crowell).
PREREQUISITE: *Chemistry 1 or 2; 7 to be taken concurrently.*

Chemistry. 8. *Inorganic Chemistry* (*half-course*). A systematic study of the Pereodic Table.

LECTURE: *one hour per week for two semesters.*
REFERENCE BOOKS: Latimer-Hildebrand, *Reference Book of Inorganic Chemistry* (Macmillan).
Ephraim, *Inorganic Chemistry* (Nordeman).
Yost & Russell: *Systematic Inorganic Chemistry* (Prentice Hall).
PREREQUISITE: *Chemistry 1.*

Chemistry. 9. *Organic Chemistry* (*Adv. 1*) (*full course*).
Critical review of alephatic and aromatic chemistry stressing reaction conditions, mechanism, etc. Applications of electron theory to organic chemistry. Proof of structure by physical and chemical means. Intensive drill in problems of synthesis.

LECTURES: *Two hours per week for two semesters.*
REFERENCE BOOKS: Fieser & Fieser, *Organic Chemistry* (Heath).
Karrer, *Organic Chemistry* (Elsevier-Nordeman).
Gilman, *Organic Chemistry* (Wiley).
Remick, *Electronic Interpretation of Organic Chemistry* (Wiley).
Watson, *Modern Theories of Organic Chemistry* (Oxford).

Chemistry. 10. *Quantitative Analysis* (*full course*). A study of the theoretical principles underlying analytical methods. Gravimetric and volumetric techniques are applied to the determination of the main constituents in ores, alloys and other complex substances of commercial importance.

LECTURES: *One hour per week for one semester.*
LABORATORY: *Twelve hours per week for one semester.*
TEXT-BOOK: Kolthoff and Sandll, *Text-Book of Quantitative Inorganic Analysis.*
PREREQUISITE: *Chemistry 4.*

Chemistry. 11. *Kinetic Theory* (*half course*). Kinetic theory of gases; fundamental mathematical relation for velocity, collision frequency, viscosity, thermal conductivity, diffusion; imperfect gases.

LECTURES: *One hour per week for two semesters.*
TEXT-BOOK: Loeb, *Kinetic Theory of Gases* (McGraw-Hill)
PREREQUISITE: *Chemistry 7.*

Chemistry. 12. *Thermodynamics* (*full course*). First and second laws, entropy, free energy, fugacity and activity, partial molal quantities, Debye-Huckel theory

LECTURES: *Two hours per week for two semesters.*
TEXT-BOOK: Steiner, *Introduction to Chemical Thermodynamics* (McGraw-Hill)
Lewis-Randall, *Thermodynamics.*
PREREQUISITE: *Chemistry 7, Mathematics 5.*

Chemistry. 13. *Identification of Organic Compounds* (*full course*). Solubility, methods of determining the physical and chemical properties, and classification of organic compounds; preparation of derivatives; identification of several unknown; separation and identification of a mixture of organic compounds.

LECTURES: *One hour per week for two semesters.*
LABORATORY: *Three hours per week for the first semester. Six hours per week for the second semester.*
TEXT-BOOK: Shrine & Fuson, *Identification of Organic Compounds* (Wiley).

Chemistry. 14. This course includes a treatment of the theories of Inorganic Chemistry; and an elementary study of the Chemistry of carbohydrates, fats, proteins and vitamins available to pre-Medical and pre-Dental students.

LECTURES: *One hour per week for two semesters.*
REFERENCE BOOKS: Chapin, Steiner, *Second Year College Chemistry* (Wiley).
Fieser & Fieser, *Organic Chemistry* (Heath).

N.B.—Course outlined for Senior Arts pre-meds.

Chemistry. 15. *Physical Chemistry* (*Advanced*) (*half Course*). *A Study of the Phase Rule.*

REFERENCE BOOKS: Findlay, *Phase Rule* (Dover).
Glasstone, *Textbook of Physical Chemistry* (Van Nostrand).
LECTURES: *One hour per week for first semester.*

Chemistry. 16. *Surface and Colloid Chemistry* (*half course*). A study of the Physical Chemistry of surfaces and the properties of sols, gels, and emulsions.

LECTURES: *One hour per week for two semesters.*
TEXT-BOOKS: Hortman, *Colloid Chemistry* (Houghton Mifflin).
Weiser, *Colloid Chemistry* (Wiley).
Adams, *Physics, Chemistry of Surfaces* (Oxford).

***Chemistry.** 17. *Atomic Structure and Valence Theories* (*half course*).

LECTURE: *One hour per week for two semesters.*
REFERENCE BOOKS: Pauling, *Nature of the Chemical Bond.*
Palmer: *Valency* (Cambridge).

Chemistry. 18. *Physical and Colloid Chemistry Laboratory* (*full course*) Advanced Physics — chemical methods.

LABORATORY: *Six hours per week for two semesters.*
TEXT-BOOK: Daniels, Matthew and Williams, *Experimental Physical Chemistry* (McGraw-Hill).

Chemistry. 19. *Organic Preparations* (*full course*). In the first part of this course the student is expected to perform some of the more difficult organic syntheses. In the second, the student will be required to work out his own methods of preparation.

LABORATORY: *Six hours per week for two semesters.*
TEXT-BOOKS: Fieser, *Exp. in Org. Chem.* (Heath).
Weygand, *Organic Preparation* (Interscience), *Organic Syntheses* (Wiley), *Organic Reactions* (Wiley).

***Chemistry.** 20. *Quantitative Analysis* (*Advanced*) (*half course*). Special (Wiley).

Methods of quantitative analysis: colorimetric analysis, Micro determination of carbon, hydrogen and nitrogen in organic compounds, pH measurements.

LECTURES: *One hour per week for one semester.*
LABORATORY: *Six hours per week for one semester.*
REFERENCE BOOKS: Nierderl and Nierderl, *Organic quantitative Micro Analysis* (Wiley).
Kolthoff and Sandell, *Quantitative Inorganic Analysis* (Wiley).
Kolthoff and Laitinen, *pH and Electro-titrations* (Wiley).

***Chemistry.** 21. *Biochemistry (full course).* A review of the chemistry of carbohydrates, lipids, proteins. A study of the following topics: Enzymes, foods, vitamins, digestion, detoxication, absorption, blood, the chemistry of Respiration, metabolism, biological oxidation, energy metabolism, chemistry of tissues, urine, hormones.

LECTURES: *Two hours per week for two semesters.*

LABORATORY: *Six hours per week for two semesters.*

TEXT-BOOKS: Harrow, *Textbook of Biochemistry* (Saunders)

Laboratory Manual of Biochemistry (Saunders)

Chemistry. 22. *Organic Chemistry (Adv. 2) (full course).* Optical and geometrical insomerism, carbohydrates, lipids, proteins, vitamins.

LECTURES: *Two hours per week for two semesters.*

TEXT-BOOKS: Gilman, *Organic Chemistry* (Wiley).
Honeyman, *Chemistry of Carbohydrates* (Oxford).
Ralston, *Fatty Acids and Their Derivatives* (Wiley).
Bloor, *Biochemistry of the Fatty Acids* (Reinhold).
Sahyun, *Outline of the Amino Acids and Proteins* (Reinhold).

***Chemistry.** 23. *Electrochemistry (half course).* Electrolytic conduction and electrolysis: Faraday's laws; specific and equivalent conductance and measurement of conductance; mobility and transport number; theory of strong electrolytes; thermodynamics of cells; electrode potentials; concentration cells, liquid junction potentials; overvoltage and polarization phenomena.

LECTURES: *Two hours per week for one semester.*

TEXT-BOOKS: Glasstone, *Introduction to Electrochemistry* (Van Nostrand).
Creighton, *Electrochemistry* (Wiley).

*Course not offered in 1949-50.

COMMERCIAL LAW

Laws of contracts, sale, agency, partnership, company law and negotiable instruments.

LECTURES: *Three hours a week for two semesters.*

DESCRIPTIVE GEOMETRY

Descriptive Geometry. This course is divided into two parts:

(a) Descriptive Geometry—Theory of Orthographic projection, planes and their traces, oblique planes solutions, dihedral angles and practical mining problems involving principles covered in the course.

(b) Engineering Problems—Geometrical constructions of eclipses, hyperboral cycloids, involutes, etc. Pictoral drawings including isometric oblique, perspective drawing. Development and intersections of surfaces. Free hand sketching.

LECTURES: *Two hours a week for two semesters.*

LABORATORY: *Four hours a week for two semesters.*

TEXT-BOOKS: French, *Engineering Drawing.*
W. G. Smith, *Practical Descriptive Geometry.*

ECONOMICS

Economics 1. Economic History of Europe.

(a) *The Medieval Era,* 600-1500: A Society based on Manors; Industry based on Crafts; Commerce based on Towns; The Beginnings of Capitalism.

(b) *Early Modern Times,* 1500-1776: The Expansion of Europe, Expanding Capitalism; Mercantilism.

(c) *Modern Times,* 1776-1850: Introduction; Mechanization of Industry; Changes in Agriculture; Commerce; Business Organization and Finance; Economic Development and its Relationship to Society, Politics and Thought.

(d) *Modern Times,* 1850-1914: Machine Industry comes of Age; The Adjustment of Agriculture to Capitalism; Increasing Dependence on the Market; Industrial Capitalism, Finance, Capitalism, and Business Organization; Economic Development and its Relationship to Society; Politics and Thought.

(e) *Modern Times,* 1914- : The First World War; Consequences of the World War of 1914-1918; In Our Time; The Second World War; Post-War Developments.

Three hours a week for two semesters.

TEXT-BOOKS: S. B. Clough and C. W. Cole, *Economic History of Europe.*
Herbert Heaton, *Economic History of Europe.*
Karl Helleiner, *Readings in Economic History.*

Economics 2. Principles of Economics.

(a) Production: Human Wants and the Scarcity of Goods; Factors and Functions in Production; The Agricultural Organization of Production; The Industrial Organization of Production; The Business Organization of Production; Capitalistic Combinations and Their Regulation; Labour Organizations and Their Policies; Industrial Conflict; Industrial Peace.

(b) Exchange: The Money System of Exchange; The Credit System of Exchange; International Trade and Exchange; The Regulation of Foreign Trade; Protectionism and Free Trade; Transportation; Organized Markets.

Valuation: The Genesis of Value and Price; Market Price under Competitive Conditions; Normal Price under Competitive Conditions; Price, under Conditions of Monopoly and Monopolistic Competition; Price under Regulation by Public Authority.

(c) **Distribution:** Wages, Interest, Rent, Profits, General Price Changes, Business Cycles.

Consumption and Savings: The Interdependence of Consumption and Production; Spending and Saving; Providing Protection through Insurance; Social Insurance and Social Security; The Population Factor in Production and Consumption.

(d) **Financing Government:** Public Expenditures, Non-tax Revenues, Forms of Taxation, Public Loans and Debts.

Economic Systems: The Economic Policies of Government; The System of Capitalism and Regulated Competitive Enterprise; Government Regulation or Ownership of the Public Utilities within the Capitalistic System; the Systems of Socialism and Communism.

Three hours a week for two semesters.

TEXT-BOOKS: W. H. Kiekhofer, *Economic Principles, Problems and Policies.*

John F. Cronin, S.S., *Economic Analysis and Problems.*

Economics 3. Statistical Methods.

An introduction to statistical methods applied to Economics; Methods and Tabulation; Frequency Distributions; Measures of Central Tendency; Measures of Variability; Probability; the Normal Curve; Correlation; Reliability and Validity; Analysis of Time Series; Index Numbers.

Three hours a week for two semesters.

Economics 4. Money and Banking.

Monetary Systems—Characteristics and Functions of Money; Banking Organization and Practice; Central Banking Organization and Practice in Canada, United States and England; Other Financial Institutions; The Principles and Mechanism of International Payments.

Monetary Theory—Long Run Theories, Short Run Theories; Development of Short Run Economics, The Bullion Controversy, The Banking and Currency Schools; Contemporary European Monetary Theories; Policies and Practice of Central Banks; Monetary and Economic Ideals and palliatives; Economic Equilibrium in International Exchange.

Three hours a week for two semesters.

Economics 5. Economic Theory.

More advanced study of theory with special reference to problems of value distribution; Economic Policy and Contemporary Economic Schools.

Three hours a week for two semesters.

Economics 6. Labour Problems and Institutions.

The study of the Organized Labour Movements of Europe, United States and Canada; Forms and Structure of Labour Organizations, their Economic Problems; The Problems of Unemployment, Wages, Hours of Labour, Stability of Income and Employment, Full Employment, Social Security and a General Outline of the Problems of Industrial Relations. Emphasis will be placed on the Social teaching of the Church as contained chiefly in the Social Encyclicals.

Three hours a week for two semesters.

Economics 7. International Trade and Commercial Policies.

Fundamental Problems of International Trade, including Foreign Exchange, Free Trade and Protection; Commercial Treaties; Quotas and Exchange Controls.

Three hours a week for two semesters.

ENGLISH

English 1. *Precepts and Analysis:* Lectures on Literature, Art, Art and Morality, Style, Taste, and Literary Art, with special emphasis on Poetry, its nature, constitutive elements and varieties; to which is added a study of the literary art of selected works of poetry and prose calculated to heighten the student's appreciation, and to stimulate and guide his creative activity.

LECTURES: *Three per week, two semesters.*

TEXT-BOOKS: Connell, *A Study of Poetry.*

Blair & Gerber, *Better Reading, Vol. 2.*

Woods, Watts & Anderson, *The Literature of England (Vol. 2).*

Shakespeare, *Five Tragedies*, Pocket Book Edition.

English 2. *Survey of English Literature:* A Factual, Chronological Survey of English writers from the beginning to Cowley, against their intellectual and social backgrounds.

LECTURES: *Two hours per week, two semesters.*

TEXT-BOOK: Woods, Watts & Anderson, *The Literature of England (Vol. 1).*

English 3. *Composition:* At least six critical reports on books read, and weekly exercises in prose and verse composition.

LECTURES: *One hour per week, two semesters.*

TEXT-BOOK: Perrin, *Writer's Guide and Index to English.*

English 4. *Literature and Composition.* A survey substantially the same as English 2 along with lectures on the fundamentals of literary art, and weekly exercises in remedial and functional English.

LECTURES: *Three hours per week, two semesters.*

TEXT-BOOKS: Woods, Watts & Anderson, *The Literature of England (Vol. 1).*

Shakespeare, *Five Tragedies*, Pocket Book edition.

Perrin, *Writer's Guide and Index to English.*

English 5. *The Art of Eloquence.* Lectures on the sources of success in Oratory, on Invention and Arrangement of Thought, on the Emotions and the Means adopted by the great orators to arouse or calm them; and on the Types of Oratory, Forensic, Demonstrative and Sacred; to which is added a study of the Oratorical Art of selected works calculated to heighten the student's appreciation and stimulate and guide his creative activity. This course is closely integrated with the Latin and Greek courses of the student.

LECTURES: *Three hours per week, two semesters.*
TEXT-BOOK: Donnelly, *Persuasive Speech.*
Selected texts.

English 6. *Survey of English Literature.* A continuation of English 2, from Cowley to Bridges.

LECTURES: *Two hours per week, one semester.*
TEXT-BOOK: Woods, Watts & Anderson, *The Literature of England.*

English 7. *English Drama.* A survey of English Drama from its liturgical beginnings as far as the modern period, with an intensive study of Shakesperean Tragedy.

LECTURES: *Two hours per week, one semester.*
TEXT-BOOKS: Woods, Watts & Anderson, *The Literature of England.*
Shakespeare, *Hamlet, King Lear* (ed. Hudson).
REFERENCE BOOK: Bradley, *Shakesperean Tragedy.*

English 8. *Composition.* (Closely related to English 5). Daily exercise in making use of the Topics; weekly preparation of briefs in the first semester, and twice weekly composition of short original speeches in the second semester. This work is integrated with the Public Speaking Class. Vigorous and complete expression in verse in imitation of the Masters and in original sonnets is also required.

English 9. *Literature and Composition.* Survey of English Literature continued, from Cowley to Bridges. To this is added analysis and practice of the fundamental elements of the Art of Eloquence.

LECTURES: *Three hours per week, two semesters.*
TEXT-BOOKS: Woods, Watts & Anderson, *The Literature of England*
Perrin, *Writer's Guide and Index to English.*

English 10. *19th Century Thought.* A detailed study of representative 19th Century texts, made in close connection with the History of Philosophy courses.

LECTURES: *Two hours per week, two semesters.*

English 11. *Modern Literature.* A survey of modern English, Canadian and American literature.

LECTURES: *Two hours per week, two semesters.*

English 12. *Catholic Literary Revival.* A survey study of the Catholic literary revival.

LECTURES: *Two hours per week, two semesters.*
TEXT-BOOKS: Alexander: *The Catholic Literary Revival.*

English 13. *Report Writing.* This course, (presupposing that the student has acquired the habits of effective organization of matter and of clear expression through his composition work in English 4 and English 9), teaches the mechanics only of report writing.

LECTURES: *One hour per week, one semester.*
TEXT-BOOKS: Perrin: *Writer's Guide and Index to English* (Neilson)

ENGINEERING PROBLEMS

Engineering Problems. 1. Problem course designed primarily to afford practice in the solution of problems.

LECTURES: *One hour a week for two semesters.*

Engineering Problems. 2. Application of mathematics and mechanics to simple scientific and engineering problems, with special attention to mathematical and graphical presentation of ideas, including elementary graphical statics.

LECTURES: *Three hours a weekfor two semesters.*

Engineering Problems. 3. Application of physical and chemical principles to some fundamental problems in Chemical Engineering.

LECTURES: *One hour—two hours, problems, for one semester.*

FRENCH

French 1.

(a) 1. PHONETICS. Practical exercises in French pronunciation. The study of the formation of French vowel sounds according to the principles of the "Association Phonétique Internationale."

2. PRINCIPLES OF GRAMMAR. Study of the fundamental principles of French grammar; the use of the subjunctive, morphology and syntax.

3. PUBLIC SPEAKING. From his reading of French periodicals the student is required to prepare and deliver each week a talk on some subject of current or literary interest. General discussion by the class.

LECTURES: *One hour a week for two semesters.*
TEXT: *Local French Periodicals.*

(b) SURVEY AND STUDY OF LITERATURE.

Middle Ages: General survey of the period. *La Chanson de Roland* (Variété). *Contes du Moyen Age* (Variété). *Aucassin et Nicolette* (Heath). Villon: *Poésies Choisies.*

Molière: The dramatist. *Le Bourgeois Gentilhomme* (Class. Larousse). *Les Précieuses Ridicules.* (Class. Larousse).

Sixteenth Century: The Renaissance. Marot, *La Pléiade.* Ronsard: *Poésies Choisies.*

Eighteenth Century: General survey of the Period. Beaumarchais: *Le Barbier de Séville.* (Class. Larousse). Voltaire, Rousseau.

Nineteenth Century: Romanticism Chateaubriand: *Atala* (Class. Larousse). Hugo: *Hernani* (Nelson), Lamartine, Musset. Vigny: *Poésies Choisies.*

LECTURES: *Two hours a week for two semesters.*

REFERENCE TEXT: Badaire, *Précis de Littérature* (Heath).

French 2.

(a) PUBLIC SPEAKING. From his reading of French periodicals the student is required to prepare and deliver each week a talk on some subject of current or literary interest. General discussion by the class.

LECTURES: *One hour a week for two semesters.*

TEXT: *Local French Periodicals.*

(b) SURVEY AND STUDY OF LITERATURE.

Seventeenth Century: Classicism Corneille: *Le Cid* (Hachette).
La Fontaine: *Fables* (Hachette).
Nineteenth Century: Realism. Daudet: *Tartarin de Tarascon.*
Maupassant: *Contes* (Variété).
Modern French Literature: General survey. Verlaine, Claudel, Ghéon, Bloy, Bourget, Bazin, Mauriac.
Canadian Literature: General survey. Crémazie, Fréchette, Le May.
Hertel: *Le Beau Risque.* (Fides). Savard: *Menaud maître draveur.*

LECTURES: *Two hours a week for two semesters.*

REFERENCE TEXT: Badaire, *Précis de Littérature* (Heath).

French 3.

(a) Pargment: *Deuxième Etape en Langue Française* (Holt).
Le Tourneux: *Correspondance Commerciale.* (Heath, French Verb Pad.).
(b) Molière: *Le Bourgeois Gentilhomme.* (Gage).
Deval: *Tovaritch.* (Holt).

LECTURES: *Three hours a week for two semesters.*

French 4.

(a) Pargment: *Deuxième Etape en Langue Française.* (Holt).
Heath French Verb. Pad.

LECTURES: *One hour a week for two semesters.*

(b) Molière: *Le Bourgeois Gentilhomme.* (Gage).
Deval: *Tovaritch.* (Holt).

LECTURES: *Two hours a week for two semesters.*

French 5.

Promenade Littéraire (Dryden).

LECTURES: *Three hours a week for two semesters.*

French 6.

Promenade Littéraire (Dryden).

LECTURES: *Two hours a week for two semesters.*

FUNDAMENTAL LAW

This course is designed to serve as a means of acquainting the students with the basic principles and history of the legal system in force in the Province of Quebec and, for those proceeding to further studies, as an introduction to the study of Law.

The course will consist of a series of lectures given weekly throughout the year and touching upon the following topics:—

'Law', its significance; Roman Law (Institutes of Justinian), its scheme and relation to modern systems; Development of French Law, and Legal History of the Province of Quebec; Constitution of the Dominion of Canada; Law of the Province of Quebec and its outstanding characteristics.

No text-book is indicated, but throughout reference will be given to well-known works which the students will be called upon to consult.

GEOLOGY

Geology. 1. *General Geology.* Elements of mineralogy, petrology; dynamical and structural geology and historical geology.

LECTURES: *Two hours a week for two semesters.*

LABORATORY: *Two hours a week for two semesters.*

GREEK

Greek 1. *Authors:* Homer—*Odyssey.*
Plato—*Apologia.*

TEXTS: Schroder, *A Reading course in Homeric Greek.*
Second Year Book. (Lyola Press, Chicago).
Williamson, *Plato's Apology* (Macmillan).

Greek 2. Sophoclis—*Oedipus Tyrannus.*
Selections from *Demosthenes.*
Three hours a week for two semesters.

TEXT-BOOKS: Campbell & Abbott, *Sophocles 9* (Clarendon).
Holmes, *De Corona* (Longmans).
Abbott & Matheson, *Philippics* (Clarendon).

HISTORY

History 1. *Western Civilization.*

This course covers the following topics: The Ancient East; the Hellenistic Age; Rome, republic and empire, decline; the Middle Ages, the Renaissance, Reformation and Wars of Religion; the Age of Enlightment; the French Revolution; the Congress of Vienna; the Industrial Revolution; the New Imperialism; the Great War.

LECTURES: *Three hours a week for two semesters.*

TEXT-BOOKS: Bannon, *Epitome of Western Civilization* (Bruce), and assigned readings.

History 2. *Canadian History.*

Canadian History in its relation to the expansion of European civilization into the Western Hemisphere.

LECTURES: *Three hours a week for two semesters.*

TEXT-BOOKS: Wittke, *History of Canada.*
R. S. Cotterill, *A Short History of the Americas* (Prentice-Hall).
E. W. McInnis, *The Unguarded Frontier.*
Other readings to be assigned.

History 3. *The Origins of Modern Russia.*

In this course are studied the causes that brought into existence Modern Soviet Russia.

LECTURES: *Two hours a week for one semester.*

History 4. *History of Science.* The beginnings of science in the East. Egyptian science. Science in Greece and Rome. The "Dark" Ages. Hindu and Arabian Science. Medieval Science. Science in the Renaissance. The rise of Modern Science. Science and invention in the eighteenth, nineteenth and twentieth centuries.

LECTURES: *One hour a week for two semesters.*

TEXT-BOOK: Sedgwick and Tyler, *A Short History of Science.*

REFEENCE BOOKS: Moore, *History of Chemistry.*
Nordenskiold, *History of Biology.*

History 5. *History of Mathematics.*

LATIN

Latin 1. *Authors:* Cicero—*Selected Orations.*
Horace—*Selected Odes.*
Livy—*Selection from Book XXI.*
Three hours a week for two semesters.

TEXT-BOOKS: Allen & Greenough, *Select Orations of Cicero* (Ginn).
Bennett & Rolfe. Horace, *Complete Works* (Allyn Bacon).
Melhuish, *Livy XXI* (Macmillan).

Latin 2. *Prose Composition*—Bradley's Arnold, Chap. 1-34.
Two hours a week for two semesters.

TEXT-BOOK: Bradley's Arnold, *Latin Prose Composition* (Longmans).

Latin 3. *Authors*: Cicero—*Pro Lege Manilia.*
Pro Milone.
Horace—*Selected Satires & Epistles.*
Tacitus—*Agricola.*

TEXT-BOOKS: Allen & Greenough.
Bennett & Rolfe.
Church & Brodribb, *The Agricola of Tacitus* (Macmillan).

Latin 4. *Prose Composition.* Bradley's Arnold, Chap. 35-67.

TEXT-BOOK: Bradley's Arnold.

MAPPING

Mapping. Plotting from transit-and-chain and stadia notes taken in Summer School 1 in Surveying; earthwork calculations; inking, tinting and finishing map, with title, legend, north-point and border.

LABORATORY: *Six hours a week for two semesters.*

MATERIALS OF ENGINEERING

Materials of Engineering. An account of the sources, winning, general properties, trade practices and economics of both non-metallic and metallic materials and their products, used in engineering construction and in the manufacturing industries, with emphasis on those not discussed in more detail in subsequent courses.

LECTURES: *One hour a week for two semesters.*

MATHEMATICS

Mathematics. 1a. *Plane Trigonometry.* The trigonometric functions and solution of right-angled triangles. Measurement of angles, identical relationships among the functions, trigonometric equations. Graphs of the trigonometric functions. Solution of triangles. Logarithms.

LECTURES: *Three hours a week for one semester.*

TEXT-BOOK: Tate, *Elementary Math. Analysis* (Pitman).

Mathematics. 1b. *Algebra and Graphs.* Linear and quadratic functions and their graphs. Ratio and proportion. The progressions. Permutations and combinations. The binomial theorem. Mathematics of investment.

LECTURES: *Three hours a week for one semester.*

TEXT-BOOK: Tate, *Elementary Math. Analysis* (Pitman).

Mathematics. 2a. *Plane Trigonometry.* The trigonometric functions and solution of right-angled triangles. Measurement of angles, identical relations among the functions and trigonometric equations. Functions of compound angles, transformations of products and sums. Logarithms. Solution of triangles. Graphs of the trigonometric functions, general solutions of trigonometric equations and inverse functions.

LECTURES: *Three hours a week for one semester.*

TEXT-BOOK: Hall and Knight. *Elementary Trigonometry.*

Mathematics. 2b. *Analytic Geometry.* An elementary study of the straight line and circle, with an introduction to conic sections.

LECTURES: *Three hours a week for one semester.*

TEXT-BOOK: Smith, Salkover, and Justice. *Analytic Geometry.*

Mathematics. 3. *Algebra.* Linear and quadratic functions. Polynomials and algebraic equations. Rational functions, ratio and proportion and sys-

tems of equations. Series of numbers, the progressions. Permutations and combinations. Mathematical induction. The binomial theorem and approximations. Mathematics of investment.

LECTURES: *Three hours a week for two semesters.*

TEXT-BOOK: Miller and Rourke, *An Advanced Course in Algebra.*

Mathematics. 4. *Fundamentals of Mathematics.* A non-technical "finishing course" in mathematics, designed to give the student a better appreciation and understanding of the mathematics he has done and a view of the entire field of mathematical thought. The following topics, among others, are treated:—Mathematics and logic, postulational thinking, scientific theories. The evolution of the number system. The logic of algebra. The algebra of sets and consequences. Impossibilities and unsolved problems. Analytic geometry of n-dimensions. Differential and integral calculus. Probability and statistics. Mathematical induction. Transfinite numbers. Euclidean and non-Euclidean geometries. Theory of groups.

LECTURES: *Two hours a week for two semesters.*
TEXT-BOOK: Courant and Robbins, *What is Mathematics.*
REFERENCE BOOKS: Richardson, *Fundamentals of Mathematics.*
Merriman, *To Discover Mathematics.*

Mathematics. 5 *Calculus.* A first course aiming to cover, as completely as possible the ordinary techniques and applications of calculus. It includes the following topics:—Limits of functions. Differentiation and integration of polynomials with applications. The Cauchy integral. Differentiation of algebraic and elementary transcendental functions with applications to kinematics, differential geometry and the solution of equations. Methods of integration and uses of the integral in the calculation of geometric and mechanical quantities. Approximate integration. Theorems concerning integration and line integrals. Power series, Taylor's series, the exponential, circular and hyperbolic functions. Partial differentiation, line integrals, multiple integration. Introductory differential equations.

LECTURES: *Three hours a week for two semesters.*
TEXT-BOOK: Middlemiss, *Calculus.*
REFERENCE BOOKS: Courant, *Differential and Integral Calculus.*
Goursat-Hedrick, *Mathematical Analysis*, Vol. I.
Hardy, *Integration of Functions of a Single Variable*

Mathematics. 6a. *Analytic Geometry of Two and Three Dimensions.* This course, which begins with conic sections, embraces the chief topics of plane and space geometry that are of common interest to both the science and the engineering student. It includes the following:—The principal properties of the parabola, the ellipse, the hyperbola. Coordinate transformations and polar coordinates. Method of distinguishing type of conic from its unreduced equation. Some "higher" plane curves. Parametric equations. Cartesian spherical and cylindrical coordinates in space. Equations of lines, planes, cylinders, cones and surfaces of revolution. An introduction to the study of quadric surfaces.

LECTURES: *Three hours a week for one semester.*
TEXT-BOOKS: Smith, Salkover and Justice, *Analytic Geometry.*
Eisenhart, *Coordinate Geometry.*
R. J. T. Bell, *Coordinate Geometry of Three Dimensions.*

Mathematics. 6b. *Analytic Geometry of Conics and Quadrics.* A continuation of Mathematics 6a, discussing further properties of conic sections and quadric surfaces and including a complete discrimination of the second degree equations.

LECTURES: *Three hours a week for one semester.*
TEXT-BOOK: Smith, Salkover and Justice, *Analytic Geometry.*
Green, *Algebraic Solid Geometry.*
REFERENCE BOOKS: Same as for Mathematics 6a, and also
Smith, *Conic Sections.*
McCrea, *Analytic Geometry of Three Dimensions.*

Mathematics. 7a. *Algebra.* This course aims at an accurate working familiarity with the following topics:—Real numbers, decimal approximations and abbreviated methods of computation. Inequalities. Complex numbers. Formal and functional properties of polynomials, polynomial equations. Rational functions.

LECTURES: *Three hours a week for one semester.*

REFERENCE BOOKS: Knebelman and Thomas, *Principles of College Algebra.*
Lovitt, *Elementary Theory of Equations.*
Barnard and Child, *Higher Algebra.*
Whittaker and Robinson, *The Calculus of Observations.*

Mathematics. 7b. Algebra. A continuation of Mathematics 7a, embracing: Solution of cubic and quartic equations by radicals. Systems of linear equations, determinants, matrices, linear transformations (projecture and complex). Symmetric functions of the roots of an equation. Approximation of irrational numbers by rationals, impossibility of angle trisection by ruler and compass. Sequences, limits, summation of series.

LECTURES: *Three hours a week for one semester.*

REFERENCE BOOKS: Courant and Robbins: *What is Mathematics?*
Lovitt, *Elementary Theory of Equations.*
Barrand and Child, *Higher Algebra.*

Mathematics. 8a. *Algebra and Spherical Trigonometry.* This course comprises a practical treatment of spherical trigonometry and of the topics of algebra which are necessary for the study of differential equations and are not adequately treated in Maths. 3.

LECTURES: *Three hours a week for one semester.*

TEXT-BOOKS: Hart and Hart, *Solid Geometry and Spherical Trigonometry.*
Sokolnikoff, *Higher Mathematics for Engineers and Physicists.*

REFERENCE BOOKS: As in Maths. 7a.

Mathematics. 8b. *Algebra and Calculus.* A continuation of Maths. 8a and Maths. 5.

LECTURES: *Three hours a week for one semester.*

TEXT-BOOK: Sokolnikoff, *Higher Mathematics for Engineers and Physicists.*

Mathematics. 9. *Ordinary Differential Equations.* A first course with numerous applications to problems of physics, chemistry, mathematics, and engineering.

LECTURES: *Three hours a week for one semester.*

TEXT-BOOK: Morris & Brown, *Differential Equations.* (Prentice Hall).

REFERENCE BOOK: Agnew, *Differential Equations.*

Mathematics. 10. *Functions of a Complex Variable.*

LECTURES: *Three hours a week for two semesters.*

TEXT-BOOKS: Churchill, *Introduction to Complex Variables and Applications.*
Titchmarsh, *The Theory of Functions.*

Mathematics. 11. *Infinite Series and Integrals.* A study of the infinite processes used in applied mathematics with a view to securing an effective manipulation.

LECTURES: *Three hours a week for the first semester.*

REFERENCE BOOKS: Courant, *Differential and Integral Calculus.*
Sokolnikoff, *Advanced Calculus.*
Knopp, *Theory and Application of Infinite Series.*

Mathematics. 12. *Functions of a real Variable.* This course continues Maths. 11 for students of pure mathematics.

LECTURES: *Three hours a week for the second semester.*

REFERENCE BOOKS: Hardy, *Pure Mathematics.*
Goursat-Hedrick, *Mathematical Analysis.*

Mathematics. 13. *Methods of Advanced Calculus.* This course continued Maths. 11, for students of physics and engineering physics.

LECTURES: *Three hours a week for the second semester.*

REFERENCE BOOK: Franklin, *Methods of Advanced Calculus.*

Mathematics. 14. *Problems of Advanced Calculus.* A series of interesting and difficult mathematical assignments intended to integrate the students' knowledge of algebra, analytic geometry and advanced calculus.

LECTURES AND LABORATORY: *Three hours a week for two semesters.*

Mathematics. 15. *Modern Geometry.* The emphasis in this course will be placed on insight into the various mathematical relations which underlie modern geometries.

LECTURES: *Three hours a week for one semester.*

REFERENCE BOOKS: Coxeter, *Non-Euclidean Geometry.*
Robinson, *The Foundation of Geometry.*

Mathematics. 16. *Number Theory.* An introduction to the problems and methods of "elementary" and analytic number theory.

LECTURES: *Three hours a week for one semester.*

CHIEF REFERENCE BOOK: Hardy and Wright, *The Theory of Numbers.*

Mathematics 17. *Theory of Interest.* Simple and compound interest; discount; annuities certain; sinking funds; bonds; elementary interpolation.

LECTURES: *Three hours a week for one semester.*

TEXT-BOOK: H. Tate, *Mathematical Theory of Interest* (Pitman).

MECHANICS

Mechanics. 1. Elementary dynamics of particles; rectilinear motion; projectiles; the inclined plane and pulleys; impulse, impact and momentum of streams of particles; energy; statics, including equilibrium of concurrent and non concurrent co-planar forces; the funicular polygon; problems of simple beams and frameworks, with stress analysis by the method of sections.

LECTURES: *Two hours a week for two semesters.*

Mechanics. 2. Equilibrium of forces; friction; graphical statics; bending moment and shear; analytical statics; relative velocities; variable rectilinear and curvilinear motion; simple harmonic motion with applications to pendulums and springs; kinetic energy; liquid pressure. Methods of the calculus are used freely.

LECTURES: *Two hours a week for two semesters.*

TEXT BOOK: Poorman, *Applied Mechanics* (McGraw-Hill).

Mechanics. 3. *Introduction to Mechanics and hydrostatics.* Vector quantities, plane Kinematics, particle dynamics, centres of mass, plane statics, angle and cone of friction, belt friction, elasticity, simple harmonic motion, moments of inertia, plane motion of a rigid body, flexure and torsion of beams, instantaneous centres of rotation, virtual work, stationary potential energy, flexible chains and cables, gravitation, central orbits. Notion of a perfect fluid, pressure and transmission of pressure in a liquid at rest, fluids at rest under gravity, resultant pressure on a plane area, centre of pressure, general equations of equilibrium of a fluid, resultant pressure on curved surfaces, equilibrium of floating bodies, stability of equilibrium of floating bodies.

LECTURES: *Three hours per week for two semesters.*

TEXT-BOOK: *An Introduction to Mechanics* by J. W. Campbell (Pitman).

REFERENCE BOOKS: Loney, *Statics and Dynamics;* Lamb, *Statics;* Routh, *Dynamics of a Particle.*

Mechanics. 4. *Mechanics in Space.* Vector theory, statics in space, Kinetic energy and angular momentum, methods of space dynamics, pendulum motion using Jacobian elliptic functions, motion of a rigid body with a fixed point, general motion of a rigid body, Lagranges equations.

LECTURES: *Three hours a week for one semester.*

TEXT-BOOK: Synge and Griffith, *Principles of Mechanics.*

REFERENCE BOOKS: Routh, *Elementary Rigid Dynamics;* Whittaker, *Analytical Dynamics;* Lamb, *Dynamics.*

Mechanics. 5. First term of this course is the same as the first term of Mechanics 3. The matter of the second term is made up of selected topics from Mathematics and Classical Mechanics which equip Chemistry students for the study of Quantum Theory.

LECTURES: *Three hours a week for two semesters.*

MECHANICAL DRAWING

Mechanical Drawing. 1. Selection and use of drafting instruments and materials; lettering, conventional practices and symbols, sectional views and methods of reproduction.

LABORATORY: *Three hours a week for two semesters.*

TEXT-BOOK: French, *Engineering Drawing.*

Mechanical Drawing. 2. Engineering drafting room procedure and technique in the production of working drawings of machinery.

LABORATORY: *Three hours a week for two semesters.*

TEXT-BOOK: French, *Engineering Drawing.*

MECHANICS OF MACHINES

Mechanics of Machines. Constrained motion; instant centers; centrodes; analysis and classification of simple mechanisms, including the quadric-crank, the slider-crank and wheel trains; design of involute gear teeth; belts and flexible couplings; cam design.

LECTURES: *One hour a week for one semester.*

LABORATORY: *Two hours a week for one semester.*

MINERALOGY

Mineralogy 1.

Lectures in the first part of the course deal with the physical properties and chemical composition of minerals, and with crystallography. The more important ores, industrial minerals, and rock-forming minerals are then described, with particular emphasis in the case of economic minerals, on uses and sources of supply.

LECTURES: *Two hours per week for two semesters.*

TEXT-BOOK: Kraus, Hunt and Ramsdell, *Mineralogy* (McGraw-Hill).

Mineralogy 2. *Determinative Mineralogy.*

Instruction is given in methods for the determination of the constituents of minerals by blowpipe analysis and related chemical tests. These tests and general physical characteristics are then applied in the identification of some 150 mineral species.

LABORATORY: *Three hours per week for one semester.*

Mineralogy 3. *Mine Projections.*

The use of descriptive geometry as applied to mining problems.

LECTURES: *Three hours per week for one semester.*

PHILOSOPHY

Philosophy. 1. *Formal Logic.* Comprises the customary treatment of formal logic with added emphasis on inductive reasoning.

LECTURES: *Six hours a week for one third of a semester.*

TEXT-BOOK: Walsh, *Logic.*

Philosophy. 2. Courses in *Epistemology, Metaphysics, Cosmology* and *Fundamental Psychology.* The aim of these courses is to introduce the student to the problems of Knowledge, Truth, Certitude, the one and the many, limitation, causality, substance, origin of the universe, physical laws, life and its various grades. The different theories proposed in regard to these problems are considered and a solution of each is offered. Hence the matter is treated both from the point of view of exposition and of controversy.

LECTURES: *Six hours a week for two-thirds of first semester.*
Six hours a week for second semester.

TEXT-BOOKS: Cunningham, *Epistemology.* Renard, *Philosophy of Being* (Bruce). Pegis, *Introduction to St. Thomas* (Random). Coolican, *Cosmology.* Bittle, *Aether to Cosmos.* Dolan, *Fundamental Psychology.*

Philosophy. 3. *Human Psychology.* The phenomena of sensuous life; sense perception, imagination and memory, sensuous appetite and movement, feelings of pleasure and pain. The phenomena of rational life; the origin of intellectual ideas; judgment and reasoning; attention and apperception; rational appetency, free will and determinism. The origin, nature and destiny of the human soul; the union of soul and body.

LECTURES: *Three hours a week for one semester.*

TEXT-BOOK: Dolan, *Advanced Psychology.*

Philosophy. 4. *Ethics.*

General Ethics. In this course are treated the subjects belonging to general theory; the nature of the moral act, the distinction between moral good and moral evil, moral habits, natural and positive moral law, conscience, rights and duties.

Applied Ethics. The application of the general principles of ethics to particular, individual and social rights and obligations; the right to pro-

perty, life, honour; the rights and obligations of domestic society; marriage and divorce, civil society, its nature and forms; the rights of civil authority; Church and State; the ethics of international relations; peace and war.

LECTURES: *Three hours a week for first semester.*
Six hours a week for second semester.
TEXT-BOOK: Cox, *Liberty, Its Use And Abuse.*

Philosophy. 5. *History of Ancient Greek Philosophy.* In ancient Greek Philosophy attention is directed primarily to the teachings of Socrates, Plato and Aristotle and to the systems of Stoicism and Epicureanism. Plotinus is taken as representative of the Alexandrian movement, and St. Augustine is studied as the most conspicuous example of early Christian philosopher.

LECTURES: *Two hours a week for two semesters.*
TEXT-BOOK: Glenn, *History of Philosophy.*

Philosophy. 6. *History of Mediaeval and Modern Philosophy.* In the study of mediaeval philosophy attention is centred on the origin and development of Scholastic Philosophy and on the system of St. Thomas as the most complete synthesis of mediaeval thought. In the division of modern philosophy, Descartes, Locke, Hume, Kant, Hegal, Comte and Spencer are taken for special study. Among present-day tendencies, the revival of Scholasticism and the trend towards realism are noticed.

LECTURES: *Two hours a week for two semesters.*
TEXT-BOOK: Glenn, *History of Philosophy.*

Philosophy. 7. Selected questions from *Epistemology, Ontology, Cosmology and Fundamental Psychology.* (This course is similar to Philosophy 2).

LECTURES: *Five hours a week for two-thirds of first semester.*
Five hours a week for second semester.
TEXT-BOOKS: Cunningham, *Epistemology,* Renard, *Philosophy of Being* (Bruce, Pegis, *Introduction to St. Thomas* (Random). Coolican, *Cosmology.* Bittle, *Aether to Cosmos.* Dolan, *Fundamental Psychology.*

Philosophy. 8. Selected questions from *Human Psychology.* (This course is similar to Philosophy 3.)

LECTURES: *Two hours a week for one semester.*
TEXT-BOOK: Dolan, *Advanced Psychology.*

Philosophy. 9. Selected questions from *General & Special Ethics.* (This course is similar to Philosophy 4).

LECTURES: *Three hours a week for first semester.*
Five hours a week for second semester.
TEXT-BOOK: Cox, *Liberty, Its Use And Abuse.*

PHYSICS

Physics. 1. *General College Physics.* An introductory course covering the elements of mechanics, sound, heat, light and electricity. The content of the subject matter is about that of *College Physics,* by Mendenhall, Eve and Keys.

LECTURES: *Four hours a week for two semesters.*
LABORATORY: *Three hours a week for two semesters.*
TEXT-BOOK: Perkins, *College Physics* (Prentice-Hall).
LABORATORY MANUAL: Keys, Watson and McPherson, *Experimental Physics.*

Physics. 2. *A more advanced course in heat, light and sound,* but not requiring a knowledge of more than elementary mathematics.

LECTURES: *Three hours a week for two semesters.*
LABORATORY: *Two hours a week for two semesters.*
TEXT-BOOK: Duncan and Starling, *Heat, Light and Sound.*

Physics. 3. *Electricity and Magnetism.* A theoretical and experimental course covering magnetism, electrostatics, current electricity, electromagnetic induction, electrodynamics, simple circuits and elementary electronics.

LECTURES: *Three hours a week for two semesters.*
LABORATORY: *Three hours a week for two semesters.*
TEXT-BOOK: Gilbert, *Electricity and Magnetism.*

Physics. 4. *Theory of Measurements.* A training in accuracy, approximate methods and probably error of calculations. A weekly assignment of problems.

LECTURES: *One hour a week for two semesters.*

Physics. 5. *Advanced Course in Heat.* Kinetic theory of gases, perfect gas law; Maxwells Distribution law; Van der Waals equation; transport phenomena in gases; viscosity, thermal conductivity, diffusion; the First Law of Thermodynamics; methods of determining J. Carnot Cycle; Kelvin Scale; the Second Law of Thermo-dynamics; Shaw's Jacobian analysis and introduction to the thermodynamic variable. Application: latent heat equations; surface tension; e.m.f. of chemical cells; thermo-electric phenomena; thermionic emission; tension and compression of rods.

LECTURES: *Two hours a week for two semesters.*
TEXT BOOK: Roberts, Heat and Thermodynamics.
REFERENCE BOOKS: Kiefer and Stuart, *Engineering Thermodynamics.*
Lewis and Randall, *Thermodynamics.*

Physics. 6. *Electron Physics.* An introduction to the fundamentals of electronics, with emphasis on practical applications. Motion of ions and electrons in electric and magnetic fields, charge and mass of electrons, thermionic emission, photo-electricity, electron optics, atomic structure,

electron, conduction in metals. Theory of apparatus emphasized (e.g., oscillographs, photo-cells, magnetrons, electron microscopes, etc.).

LECTURES: *Two hours a week for one semestsr.*

REFERENCE BOOKS: Millman and Seely, *Electronics* (McGraw-Hill); Crowther, *Ions, Electrons and Ionizing Radiations* (Arnold).

Applied Electronics by E. E. Staff of M.I.Y. (Wiley).

Physics. 7. *Electromagnetic Theory.* Vector Calculus; vector treatment of electro statics and magnetostatics; Maxwell's equations; boundary conditions; Poynting vector; electric waves; reflection and refraction of plane waves; propagation of waves in metals and dispersive media; wave guides; radiation from a dipole and from an antenna.

LECTURES: *One hour a week for two semesters.*

REFERENCE BOOKS: Sarbacher and Edson, *Hyper and Ultra High Frequency Engineering* (Wiley).

Harnwell, *Principles of Electricity and Electromagnetism* McGraw-Hill).

Pierce: *Electric Oscillations and Electric waves* (McGraw-Hill).
Abraham and Becker, *The Classical Theory of Electricity and Magnetism* (Blackie and Son).
Skilling, *Fundamentals of Electric Waves* (Wiley).

Physics. 8. *Electrical Measurements.* D-C instruments and measurements, complete galvanometer theory, instrument calibration; A-C circuit theory, operational methods, applications; measurements of power at audio and radio frequencies; measurements with Lecher wires; electronic devices, theory of circuits; elementary, radio engineering; construction and testing of simple electrical devices; absolute measurements.

LECTURES: *Two hours a week for two semesters.*

LABORATORY: *Four hours a week for two semesters.*

REFERENCE BOOKS: Laws, *Electrical Measurements* (McGraw-Hill).
Hague. *Alternating Current Bridge Methods* (Pitman).

Campbell and Childs. *The Measurement of Conductance, Capacitance and Frequency* (Macmillan). Reich, *Theory and Application of Electron Tubes* (McGraw-Hill).

Lerman, *Radio Engineers' Handbook* (McGraw-Hill).

Physics. 9. D/C Motors. An elementary course in electrical engineering.
LECTURES: *Two hours a week for one semester.*

Physics. 10. *Properties of Matter.* Gravitation constant, acceleration due to gravity, determination of moments of inertia, bifilar suspension, compound and ballistic pendulum, elasticity and determination of elastic moduli, viscosity of liquids and gases, surface tension.

LECTURES: *One hour a week for two semesterss.*

TEXT: Newman and Searle *General Properties of Matter* (E. Benn. Co.).

REFERENCE BOOK: Champion and Davy, *Properties of Matter.* (Blackie).

PUBLIC SPEAKING

The work in this department consists in courses for vocal drill and expression, with exercises in good carriage and gesture, interpretation and delivery. Students are required to speak before the class a certain number of times each term. A gold medal is awarded annually to the student who delivers the best declamation in a public contest open to all the students of the College Course.

This work is carried on throughout the four years of the Arts Course. The last two years deal especially with debating, debates being conducted intra-murally and in competition with outside teams.

LECTURE: *One hour a week, two semesters.*

SPANISH

Spanish 1. Introductory course in Spanish grammar and elementary Spanish reading.

LECTURES: *Three hours a week for two semesters.*

TEXT-BOOKS: Remiston, *Learning Spanish* (Holt).
Grismer & Olmsted. *A México por Automóvil.*

Spanish 2. Readings from modern Spanish and Spanish-American authors. Spanish Composition.

LECTURES: *Three hours a week for two semesters.*

TEXT-BOOKS: Coester, *A Spanish Grammar* (Ginn).
Ashburn, *Selected Spanish Short Stories* (Crowell).

SOCIOLOGY

Sociology. 1. (1) *The Study of Sociology:* The Nature and Development of Sociology, The Catholic Viewpoint in Sociology.

(2) *Man's Biological Heritage:* Individual Heredity, Heredity and Environment, Racial Heredity, Race Mixture and Race Prejudice.

(3) *Man's Cultural Heritage:* Culture and Culture Change, Early Prehistoric Backgrounds, The Dawn of Civilization, Culture of Primitives.

(4) *Man's Social Nature:* The Physical Basis of Personality, Group Interactions and Personality, Major Personality Maladjustments, Minor Personality Maladjustments.

Sociology. 2. (1) *Collective Behaviour:* The Basis for the Social Processes; Competition, Conflict and Cooperation; Accommodation, Assimilation and Stratification; Social Control.

(2) *The Community:* Human Ecology; Population and Migration; Types of Communities: Urban and Rural.

(3) *Social Institutions:* Economic Institutions, Governmental Institutions, Educational Institutions, Religious Institutions, The Family.

(4) *Social Maladjustments:* Social Disorganization; Poverty and Dependency; Crime and Punishment.

Two hours a week for two semesters.

TEXT-BOOKS: R. W. Murray, C.S.C.: *Introductory Sociology*

E. J. Ross: *Fundamental Sociology.*

SUMMER SCHOOL

Summer School. A course in Mechanical Drawing and Machine Shop Work for a period of four weeks.

SUMMER ESSAY

Students entering the Senior Year of the Engineering Course must submit an essay. The most suitable subject for the essay is a topic drawn from the experience of the student during his summer work, but a similar topic connected with any engineering, scientific or industrial work with which he is familiar is acceptable. This essay should be approximately two thousand words in length and should be handed in not later than October 3rd, 1949.

SURVEYING

Surveying 1. Units of measurements; the chain-uses, errors, corrections and compensation; the level — types and limitations; differential and profile levelling; contour surveying; the transit — the vernier, horizontal and vertical angles, deflections, double deflections, azimuths, traverses and meridians; the compass — bearings, magnetic variation and declination and dip.

LECTURES: *Two hours per week for one semester.*

TEXT-BOOKS: Davis and Foote, *Surveying* (McGraw-Hill), or Breed, *Surveying*, (Wiley).

Surveying 2. *Field Work.* Practice in chaining and taping; use of the level and of the transit; complete survey of a tract of land.

Four Weeks' Summer School course in field work.

Surveying 3. Adjustments of level and of transit: theory and use of the polar planimeter; latitudes and departures: areas; plotting co-ordinates; partition of land; missing sides; stadia surveying; cross-sections, grids and slope stakes; circular curves, vertical curves.

LECTURES: *Two hours per week for two semesters.*

TEXT-BOOK: David and Foote, *Surveying* (McGraw-Hill).

Surveying 4. *Field Work.* Preliminary railway or highway survey with transit, profile and topography parties; plane table, hand level and stadia; spiral curves; cross-sectional simple triangulation networks; reciprocal levelling; soundings; current-meter surveys; introduction to mine surveying; small geological survey with Brunton compass and chain; astronomical observations.

Four weeks' Summer School.

THEOLOGY

Theology. 1. *Religion in general;* revelation in general; how to recognize divine revelation; documents of Christian Revelation. The Evangelists. The Gospels are genuine, trustworthy, complete.

Christ publicly claimed to be a prophet, the Messiah, Son of God, having the nature, knowledge, activity and powers of God. He was not Himself deceived, nor did he deceive others. His prophecies and miracles. His resurrection a proof of His mission. Other testimony to Christ's divinity: the miracles of the Apostles; the Martyrs; rapid spread of the Church. Objections.

The Church of Christ. He established an infallible teaching-body with power to rule and sanctify all men. To Peter and to his successors He promised, and gave, the primacy of jurisdiction. Christ directly established His church as a religious society, necessary for our salvation, with perpetual and unchangeable power to teach and rule.

His Church is Apostolic, One, Universal, Holy. The Catholic Church alone possesses all four marks; no other Church possesses even one of them. The Roman Pontiff is the successor of St. Peter. He is, therefore, infallible. Objections.

LECTURES: *Four periods a week.*

TEXT-BOOK: *The Defense of the Catholic Church.* Francis X. Doyle, S.J.

Theology. 2. *The nature and obligation of faith.* The rule of faith. The subject matter of faith. The existence of God. His attributes. The Holy Trinity. God the Creator of all things. How the world was created. Evolution. The purpose of Creation.

The descent of man. Original Justice. The fall of man. Our share in the primeval fall. Original sin. The Immaculate Conception. The nature and origin of the human soul. The existence and nature of the angels. The particular and general judgments. The Four Last Things.

LECTURES: *Four periods a week.*

TEXT-BOOK: "*God and Creation*". Thos. Chetwood, S.J.

Theology. 3. *Christology.* In Christ, true man, there is but one person. His human intellect and will. He redeemed us from sin. His merits. The worship of Christ. The glories of Mary. Veneration of relics and images.

Soteriology. The redemption applied to man. The existence and nature of actual grace. Man's natural capacity for good. The necessity of actual grace for salutary acts. The power of concupiscence. God's will to save men. Efficacious Grace. Justification and sanctifying grace.

LECTURES: *Three periods a week.*

TEXT-BOOK: *Christ, The Redeemer*, by Chas. Herzog, S.J.

Theology. 4. *The Sacraments.* Supernatural Life. The Sacraments are signs of Grace. Sacraments of the dead and of the living. Baptism: its effects; its necessity. Confirmation: its effects; the obligation to receive Confirmation. The Holy Eucharist: transubstantiation: Holy Communion under one kind. The Mass: a true sacrifice; an application of the fruits of the sacrifice of the Cross.

The Sacraments. Penance: mortal and venial sin; repentance; perfect contrition; the power of forgiving sins; jurisdiction; indulgences. Extreme Unction; sacramental effects; bodily health sometimes restored. Holy Orders; the Priesthood; other sacred Orders; Diaconate; Subdiaconate and Minor Orders. Matrimony: primary and secondary ends; unity; indissolubility; the Pauline Privilege; impediments; marriage consent; the Nuptial Mass.

LECTURES: *Three periods a week.*

TEXT-BOOK: *Channels of Redemption*, by Chas. Herzog, S.J.

EXPENSES FOR THE YEAR

General

THESE FEES APPLY ONLY TO RESIDENTS OF CANADA

Tuition:

Arts Course

Freshman and Sophomore	$33.00 per quarter	$132.00 the year
Junior-Senior Pre-Law	44.00 " "	176.00 " "
" " Pre-Med	56.25 " "	225.00 " "

Science-Engineering Courses

All Years	$56.25 per quarter	$225.00 the year

Commerce Course

Freshman-Sophomore	$37.50 per quarter	$150.00 the year
Junior-Senior	43.75 " "	175.00 " "

Residence Facilities:

Board, including laundry	$125.00 per quarter	$500.00 the year
Single Room	22.00 " "	88.00 " "
Double "	16.50 " "	66.00 " "

These charges must be paid quarterly in advance, viz., September 23rd, November 15th, February 1st, April 1st.

All of the above fees include the yearly sundry fee.

Special

Laboratory Breakage Deposit (returnable)	
Sophomore Arts (Biology I students only)	$ 5.00
Junior Arts	5.00
Senior Arts	10.00
Freshman Science	10.00
Sophomore, Junior, Senior Chemistry students	20.00
Other Science students	15.00
Fee for Biology 3 Lab. (Payable by Arts students)	20.00
Registration fee (Payable on first entrance only)	5.00
Guarantee Deposit from Resident students (returnable)	25.00
Graduation Fee:	
Arts students	10.00
Science "	18.00
Fee for supplemental examinations	2.00
Fee for supplemental examination other than on assigned day	5.00
Use of Piano	10.00 a year
Resident Students staying at the College during Christmas vacation will be charged	3.00 a day
Infirmary, per day	3.00

During the school year the same charge is made for a student in residence for less than a quarter. The minimum time is one month.

Music lessons (various instruments), at Professors' Charges.

Remarks

(1) All students are expected to pay the registration fee when their application has been accepted.

(2) Resident students will deposit, at the same time, one-half of the room fee.

(3) No deduction is allowed for less than one month's absence.

(4) No student will be admitted to a semester examination promoted from one class to another, or receive any degree, diploma or certificate whatsoever, until his financial accounts have been previously and satisfactorily settled.

(5) The College will pay no debt contracted by the students unless a deposit is left with the Bursar, with whom the parents are requested to have an understanding as to the allowance they wish to make their sons. Large sums of money should not be left in the keeping of the students.

(6) Any injury done to the walls or furniture of the College will be charged to the offender's account.

(7) Drafts, cheques, money-orders, etc., should be made payable at par to "Loyola College" and addressed to The Bursar, Loyola College, Montreal.

N.B.—Non-residents of Canada :
Board including laundry..... $600.00
Tuition—Add $50.00 to fee of chosen Course.